

burg on December 17, and those made at Markree by Mr. Cooper with the meridian circle on January 20 and February 17.

Mean Longitude	94° 46' 51".14	} Jan. 1, 1846, Greenwich M. T. Mean Equinox, Jan. 1, 1846.
Mean Anomaly.....	319 29 32.32	
Perihelion	135 17 18.82	
Node	141 16 59.46	
Inclination	5 19 59.06	
Eccentricity	11 10 4.09	
Log. a	0.4138782	
Mean Motion	849".5508	
Revolution, 1525.5 days,		

A comparison of the foregoing elements with the observation of January 20 gives the *errors* of the calculated place, +0".01 in latitude, and -0".37 in longitude.

A comparison of M. Encke's elements with the same observation gives the *errors* of the calculated place, -35".8 in right ascension, and +5".1 in declination.

Mr. Hind, director of Mr. Bishop's Observatory, South Villa, Regent's Park, obtains the following elements based on the Altona observations of December 17, the Bonn observations of January 2, and the Königsberg places of January 14:—

Mean Longitude	94° 1' 51".09	Jan. 0, 1846, G. M. T.
π	135 15 52.80	} Mean Equinox, Jan. 0.
Ω	141 19 12.66	
i	5 19 54.92	
ϕ	10 48 44.06	
Log. a	0.4116841	
Log. Mean Motion.....	2.9324804	
Sidereal Revolution, 1514.0 days.		

BIELA'S (or Gambart's) COMET.

This comet at its present apparition has shewn itself *double*.

Professor Challis announced this extraordinary appearance in the following letter to the President:—

“On the evening of January 15, when I first sat down to observe it, I said to my assistant, ‘I see *two* comets.’ However, on altering the focus of the eyeglass and letting in a little illumination, the smaller of the two comets appeared to resolve itself into a minute star with some haze about it. I observed the comet that evening but a short time, being in a hurry to proceed to observations of the new planet. On first catching sight of it on this evening (Jan. 23), I again saw two comets. Clouds immediately after obscured the comet for half an hour. On resuming my observations, I suspected at first sight that *both* comets had moved. This suspicion was afterwards confirmed: the two comets have moved in equal degree, retaining their relative positions. I com-

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pared both with Piazzi 0^h 120, and the motion of each in 50^m was about 7^s in R.A. and 10" in N.P.D. What can be the meaning of this? Are they two independent comets? or is it a binary comet? or does my glass tell a false story? I incline to the opinion that this is a binary or double comet, on account of my suspicion on Jan. 15. But I never heard of such a thing. Kepler supposed that a certain comet separated into two, and for this Pingré said of him, '*aliquando bonus dormitat Homerus.*' I am anxious to know whether other observers have seen the same thing: in the meanwhile, I thought, with the evidence I have, I had better not delay giving you this information."

In a subsequent letter Professor Challis says, "There are certainly two comets. The north preceding is less bright and of less apparent diameter than the other, and, as seen in the Northumberland telescope, has a minute stellar nucleus. I compared the two comets independently with A. S. C. 51 on the evenings of January 23 and 24, and obtained the following places:—

"Preceding and Fainter Comet."

		Greenwich M.T.	R.A.	N.P.D.
		^h ^m ^s	^h ^m ^s	[°] ['] ["]
1846	Jan. 23	7 8 11.9	0 25 56.68	91 9 30.1
	24	7 1 19.2	0 29 18.40	91 14 35.2

"Following and Brighter Comet."

		Greenwich M.T.	R.A.	N.P.D.
		^h ^m ^s	^h ^m ^s	[°] ['] ["]
1846	Jan. 23	7 1 17.7	0 26 0.88	91 11 31.6
	24	7 2 58.5	0 29 23.51	91 16 42.1

"The greater apparent distance between the comets on January 24 is partly accounted for by their approaching the earth. I saw the comets on January 25, but took no observation. The relative positions were apparently unchanged.

"I think it can scarcely be doubted, from the above observations, that the two comets are not only apparently but really near each other, and that they are physically connected. When I first saw the smaller on January 15 it was faint, and might easily have been overlooked. *Now* it is a very conspicuous object, and a telescope of moderate powers will readily exhibit the most singular celestial phenomenon that has occurred for many years,—a double comet."

The duplicity of Biela's comet was seen in America two days earlier.

At Königsberg, Mr. Wichmann observed the comet on the 14th, but saw nothing of the companion. There was, however, some vapour in the air. On January 15, the air being purer and the moon not risen, he saw the companion comet immediately with a power of 45.

Professor Encke saw the comet double on January 27 and 28. It had two very distinctly separated heads, each with somewhat of an indication of a tail. The direction of these nascent tails was perpendicular to the line joining the heads. Both heads moved together with the same velocity and in the same direction, the fainter preceding and being to the north of the brighter.

Mr. Hind describes the appearance of the comet as like the dumb-bell nebula in *Vulpecula* seen with small optical power. On the 19th December preceding he had noticed the nebulosity to be more extended in the N. F. quadrant, but there was no second head. The comet was then pear-shaped. Professor Littrow saw *both* heads included in a *common* nebula.

Mr. Rumker found the angle of position changed 180° , that is, the brighter head had become the fainter. This is confirmed by M. Encke, who adds, that during the moonlight the heads were equal. These remarks apply to the middle of February or a little earlier. Yet Mr. Lassell, on March 2, says, "The first or preceding comet, incomparably fainter than the second, perhaps not one-fourth its brightness. The second comet had a positive bright stellar nucleus, the first scarcely any."

OBSERVATIONS.

KÖNIGSBERG. With the Heliometer. (M. Wichmann.)

Date.	Königsberg M. T.	R. A.	Dec.	Differences.	
				R. A.	Dec.
1846. Jan. 14	^h ^m ^s 6 58 40.1	359° 23' 37".3	−0° 32' 26".25	<i>a</i> −10' 5".9	+11' 40".2
15	6 54 51.1	0 7 49.5	0 36 16.2	<i>a</i> +34 6.3	+7 50.25
17	7 4 52.6	1 38 47.1	0 44 5.9	<i>b</i> −5 22.1	+25 21.2
26	6 58 7.1	9 1 32.4	1 27 44.6	<i>c</i> +20 29.6	−16 15.5
27	7 27 34.1	9 55 31.45	1 33 43.2	<i>d</i> −11 28.95	−13 57.3
28	7 14 11.9	10 48 44.3	1 39 56.2	<i>e</i> −28 30.1	+18 57.6
29	7 26 0.9	11 43 43.4	−1 46 29.1	<i>e</i> +26 29.0	+12 24.7

The mean positions of the stars of comparison (which are to be considered as approximate) are for 1846.0,

	R. A.	Dec.	
<i>a</i>	359° 33' 38".0	−0° 44' 8".75	H.C. p. 119, B. Zones 34, 40, 112
<i>b</i>	1 44 3.6	1 9 28.7	H.C. p. 131
<i>c</i>	8 40 56.4	1 11 29.4	B. Zone 136
<i>d</i>	10 6 53.7	1 19 45.7	H.C. p. 131, B. Zone 136
<i>e</i>	11 17 7.9	−1 58 53.5	Piazzi 0 ^h 213